Remarks/Arguments

Claims 1-12 are pending in the application. Claims 4 and 10 have been amended.

The Examiner has rejected applicant's claims 1-4, 6-10 and 12 under 35 USC § 102(e) as anticipated by the Fuke, et al. patent (US Patent No. 6,011,929). Claims 5 and 11 have been rejected under 35 USC 103(a) as unpatentable over the latter patent taken with the Tanabe patent (US Patent No. 6,404,988). These rejections are respectfully traversed.

Applicant's independent claim 1 recites a light emitting device comprising an emission unit including at least an arc tube being elongated in a longitudinal direction thereof and having opposite ends in the longitudinal direction and a reflection umbrella A light-permeable optical unit is arranged in front of the emission unit at a side thereof closer to a subject in a manner such that a relative distance between the optical unit and the emission unit is variable. The optical unit has reflection surfaces for reflecting luminous fluxes emitted from the emission unit toward the subject, the reflection surfaces being located at locations corresponding to the opposite ends of the arc tube in the longitudinal direction thereof.

Applicant's independent claim 7 is similar to claim 1, except that the optical unit further includes a plurality of light refracting sections provided in parallel with the longitudinal direction of the arc tube, the light refracting sections have opposites sides in the longitudinal direction thereof, and the light reflection sections are provide at the opposite sides in the longitudinal direction of the light refracting sections.

With the above constructions, the present invention provides effects that the light emitting device is capable of suitably controlling the illumination range in the longitudinal direction of the light source unit with a simple and compact structure, since the light source

unit (emission unit) and the optical member can be moved relative to each other. This permits increasing or decreasing the luminous flux components reflected by the reflecting sections toward both ends of the optical member among the fluxes of the illumination light emitted from the light source unit to thus change the range of the illumination by the fluxes the of illumination light. It is therefore possible to reduce the size and weight of a photographing apparatus in which the light emitting device is mounted, and to improve the photographing performance of the photographing apparatus (see, page 57, lines 23 to page 58, lines 12, of applicant's specification).

The constructions of applicant's claims are not taught or suggested by the cited art of record.

The Fuke et al. patent relates to a flash apparatus capable of varying the emission angle of the light emitted from a light emitting portion, and more particularly, to a flash apparatus capable of varying the emission angle which can prevent unevenness of the light distribution that occurs when a wide light emission angle is set (col. 1, lines 5 to 10). The flash apparatus can vary the light emission angle by changing the position of a flash discharge tube 3 as a bar-like light source with respect to a reflector 2 (see, FIG. 1). The flash apparatus is provided in front of the reflector 2 with a light controller 5 for controlling the diffusion and condensation of supplied light (col. 6, lines 18 to 24).

The light controller 5 is disposed in front of the reflector 2 so as to comprise a diffusion controlling portion 6 having light diffusive action only with respect to the longitudinal direction of the flash discharge tube 3 and a condensation controlling portion 7 for omni-directionally condensing light supplied directly from the flash discharge tube 3 or via the reflector 2 (col. 6, lines 25 to 31).

In the FIG. 4 embodiment of the Fuke, et al. patent, the light controller 5 includes first and second light controlling members 10 and 11 (col. 8, lines 45-49). The first light controlling member 10 is composed of a first concave cylindrical lens 10a formed on one face in the longitudinal direction of the flash tube 3 and having light diffussive action and a Fresnel lens provided with a ring-zonal lens 10b disposed on the opposite face having a condensing action to condense light supplied directly from the flash discharge tube 3 (col. 8, lines 50-59). The second light controlling member is composed of a second concave cylindrical lens 11a formed on an opposing face to the ring zonal lens 10b in a direction perpendicular to the lens 10 and also provides a diffussive action (col. 8, lines 63-67).

The Tanabe patent relates to a camera arranged to be capable of driving a flash device to move to protruded and stowed positions and to vary the illuminating angle of the flash device (col. 1, lines 6 to 9). The camera has a flash light emitting part 20 and a driving cam 15 having a slide cam 15b and a zoom cam 15c. The slide cam 15b is arranged to drive the flash light emitting part 20 to move between the protruded position and the stowed position (col. 8, lines 14 to 21).

The mechanism for driving the flash light emitting part 20 to be protruded and to be stowed and the mechanism for driving and varying the illuminating angle are formed with such members (the driving cam 15 and levers 16, 17, 21, and 22) that are arranged to rotate and swing, on shafts which extend in the vertical direction of the camera body 1, in association with the movement of a photo-taking lens barrel 2 in the direction of the optical axis. These mechanisms are arranged approximately in a plane shape along the lower side of a space provided for slowing the flash device (col. 9, lines 59 to col. 10, lines 3).

The flash light emitting part 20 includes a case 40, a (flash) discharge tube 41, and a reflector 42. An optical prism 50 is arranged to converge the light of the discharge tube 41 by the internal reflection and refraction thereof toward an object of shooting for illuminating the object. The optical prism 50 has a front exit surface 50a formed into a cylindrical lens arranged in a direction perpendicular to the axial direction of the discharge tube 41 (col. 11, lines 28 to 30 and 54 to 59).

The Examiner states that the Fuke et al. patent teaches an "optical unit having reflection surfaces (#11a) for reflecting luminous fluxes emitted from the emission unit toward the subject." The Examiner has thus interpreted the second concave cylindrical lens 11a in the second embodiment in FIG.4 of the Fuke, et al. patent as having "reflection surfaces". However, the second concave cylindrical lens 11a in the Fukes, et al. patent corresponds to a diffussive or refracting section which is similar to the first concave cylindrical lens 10a in FIG. 4. That is, the second concave cylindrical lens 11a does not have reflection surfaces. This is made clear from the description in Fuke et al. patent which states that light is "diffused with respect to the longitudinal direction of the flash discharged tube 3 by the second concave cylindrical lens 11a" (col. 8, lines 64 to 65 and col. 9, lines 1 to 10). Thus, the lens 11a in the Fuke, et al. patent acts to diffuse or refract light and does not reflect light, as argued by the Examiner.

Accordingly, applicant's independent claims 1 and 7, and their respective dependent claims, all of which recite that the "optical unit has reflection surfaces for reflecting luminous fluxes emitted from the emission unit toward the subject", in combination with the other recited features, patentably distinguish over the Fuke, et al. patent.

Further, as to dependent claims 3 and 9, in the Fuke, et al. patent, the rainbow-like unevenness which the Fuke et al. patent intends to eliminate is a spectral phenomenon occurring when a light flux is incident on the surface of a Fresnel lens at a large angle of incidence. Particularly, the rainbow-like unevenness is conspicuous when light emitted from the ends of an elongated light source forms irregular light beams (col. 2, lines 15 to 67). To prevent the rainbow-like unevenness, in the Fuke, et al. patent, a plurality of cylindrical lenses are provided at the periphery of an optical member, and light flux from ends of a bar-like light source is dispersed on the lens surface to cause the light flux to be scattered. Even if a second concave cylindrical lens 11a is formed as shown in FIGS. 5A and 5B, nothing but refraction occurs regardless of the position of the bar-like light source, that is, reflection does not occur.

Therefore, the features recited in applicant's dependent claims 3 and 9 also further patentably distinguish over the Fuke, et al. patent

Moreover, as to dependent claims 4 and 10, the Examiner says that in the Fuke et al. patent, the cylindrical lens 11a totally reflects light from the arc tube to the opposite sides of the light reflecting section. However, the cylindrical lens 11a does not totally reflect light. That is, the cylindrical lens 11a is a refracting section. Therefore, the features of dependent claims 4 and 10 also further patentably distinguish over the Fuke, et al. patent.

As to the Tanabe patent, this patent adds nothing to the Fuke, et al. patent to result in the features which have been argued above as patentabaly distinguishing applicant's claims over the Fuke, et al. patent. Such claims thus patentably distinguish over the combination of the Fuke, et al. and Tanabe patents.

Moreover, applicant's further submit that in the Fuke et al. patent, it is the use of cylindrical lenses having concave surfaces which disperse light that produces the desired

result of preventing the rainbow-like unevenness. Accordingly, a skilled artisan would not have been motivated to replace the light dispersing cylindrical lenses of the Fuke, et al. patent with the light reflecting prisms of the Tanabe, et al. patent, since it would prevent the Fluke, et al. patent from operating as intended to achieve its desired purpose.

Finally, the Tanabe patent does not itself teach changing the relative distance between the optical prism and the emission unit. On the other hand, applicant's claims recite that the relative distance between the optical unit and the emission unit is variable. This permits varying the illumination range (illumination angle range in the longitudinal direction of the light source) by increasing or decreasing the luminous fluxes reflected by the total reflection surfaces (page 31, lines 19 to page 32, lines 23 and page 57, lines 23 to page 58, lines 12). Such a construction is not taught or suggested by the Tanabe patent.

Therefore, the features recited in applicant's claims 5 and 11 are also believed to further patentably distinguish such claims of over the Fuke et al. and Tanabe patents.

In view of the above, it is submitted that applicant's claims patentably distinguish over the cited art of record. Accordingly, reconsideration of the claims is respectfully requested.

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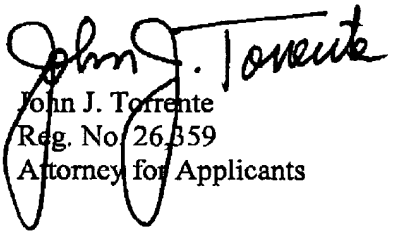
Respectfully submitted,



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